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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER LE, MIRANDA	
			ART UNIT 2167	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/765,145	Applicant(s) CHOI ET AL.	
	Examiner Miranda Le	Art Unit 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment, filed 02/02/07.

Claims 1-20 are pending in this application. Claims 1, 19, 20 are independent claims. In the Amendment, claim 20 has been amended. This action is made Final.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 20 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because it is not a machine, manufacture, process or composition of matter and therefore fails to fall within a statutory category of invention.

While the preamble of the claim recites "A computer program product which employs a storage medium...", the body of claim 20, however, lacks the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are "a first computer program code..., a second computer program code, ...", thus clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and

functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”).

It is suggested that the claim should be read as “...computer program code load in a processor...”, or some other ways to have the computer program code recited in conjunction with a physical structure, such as a computer memory in order to overcome the computer program claimed as computer code per se.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless:

(e) the invention was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Iline et al. (US Pub. No. 20040068491).

Iline anticipated independent claims 1, 19, 20 by the following:

As to claims 1, 19, 20, Iline teaches a concurrency control method in a transaction processing system for processing a plurality of transactions in parallel (*i.e. reader-writer pair*, [0028]) with respect to hierarchical data (*i.e. XML*, [0039, 0052]) the concurrency control method comprising:

producing a copy (*i.e. a first data is written to a first data store by the first writer node*, [0046], Fig. 6) of the hierarchical data at a time of starting an access to the hierarchical data by each transaction ([0011-0016; 0041-0049]);

judging (*i.e. interface TestResultReader, interface TestResultWriter, as shown in Code Listing A*, [0044-0049]) whether a collision between one of reading access (*i.e. data is read by the first reader node*, [0047], Fig. 6) or writing access to be made by a first transaction with respect to a copy of the hierarchical data for the first transaction and another one of reading access (*i.e. second reader*, [0047]) or writing access (*i.e. second writer*, [0047]) made by the second transaction with respect to a copy of the hierarchical data for the second transaction will occur or not ([0011-0016; 0041-0049]);

carrying out a processing (*i.e. formatter may read data from a data store* [0052]) for avoiding the collision when the judging step judges that the collision will occur ([0047-0053]);
and

reflecting a writing access made by the first transaction with respect to a copy of the hierarchical data for the first transaction (*i.e. a first data is written to a first data store by the first*

writer node, [0046], Fig. 6), on the hierarchical data, when the first transaction is to be finished normally (i.e. Once the first reader node is accessed, data is read from the first data store, [0046-0047]) and reflecting the writing access also on a copy of the hierarchical data for the second transaction if the second transaction is not finished yet (i.e. the second writer node is prevented from writing data to the first data store (Step 176), [0048]) (0026-0036; 0039-0042; 0044-0053)).

As per claim 2, Iline teaches the concurrency control method of claim 1, wherein the judging step whether the collision will occur or not, according to whether data looked up by making the reading access without taking the writing access into consideration and data looked up by making the reading access by taking the writing access into consideration are identical or not (0026-0036; 0039-0042; 0044-0053)).

As per claim 3, Iline teaches the concurrency control method of claim 1, wherein when the first transaction is to make the reading access with respect to a copy of the hierarchical data, the judging step judges whether the collision will occur or not according to whether first data looked up by making the reading access with respect to a copy of the hierarchical data for the first transaction and second data looked up by making the reading access with respect to data obtained by merging a copy of the hierarchical data for the first transaction and a copy of the hierarchical data for the second transaction are identical or not ([0039-0042; 0044-0053]).

As per claim 4, Iline teaches the concurrency control method of claim 3, wherein the

judging step judges that the collision will not occur when the first data and the second data are judged as identical for all transactions that can be the second transaction, and judges that the collision will occur otherwise ([0039-0042; 0044-0053]).

As per claim 5, Iline teaches the concurrency control method of claim 1, further comprising: making the writing access with respect to a shared copy produced by copying the hierarchical data in order to reflect writing accesses made by all transactions that make accesses to the hierarchical data, when the first transaction is to make the writing access with respect to a copy of the hierarchical data (0026-0036; 0039-0042; 0044-0053);

wherein when the first transaction is to make the reading access with respect to a copy of the hierarchical data, the judging step judges whether the collision will occur or not according to whether first data looked up by making the reading access and second data looked up by making the reading access with respect to the shared copy of the hierarchical data are identical or not ([0039-0042; 0044-0053]).

As per claim 6, Iline teaches the concurrency control method of claim 5; wherein the judging step judges that the collision will not occur when the first data and the second data are judged as identical, and judges that the collision will occur when the first data and the second data are judged as not identical ([0039-0042; 0044-0053]).

As per claim 7, Iline teaches the concurrency control method of claim 5, wherein when there is an upper limit to a number of shared copies that can be recorded, those shared copies

which have a higher possibility of being utilized at a time of reproducing a state in which the reading access is to be made later on are recorded at a higher priority, among the shared copies corresponding to states at times of the writing accesses with respect to the hierarchical data ([0039-0042; 0044-0053]).

As per claim 8, Iline teaches the concurrency control method of claim 1, wherein when the first transaction is to make the writing access with respect to a copy of the hierarchical data, the judging step judges whether the collision will occur or not according to whether first data looked up by making the reading access of the second transaction and second data looked up by making the reading access of the second transaction with respect to a state of the hierarchical data after the writing access are identical or not, for all reading accesses by all transactions that make accesses to the hierarchical data and that can be the second transaction ([0039-0042; 0044-0053]).

As per claim 9, Iline teaches the concurrency control method of claim 8, wherein the judging step judges that the collision will not occur when the first data and the second data are judged as identical for all reading accesses of all transactions that make accesses to the hierarchical data and that can be the second transaction, and judges that the collision will occur otherwise ([0039-0042; 0044-0053]).

As per claim 10, Iline teaches the concurrency control method of claim 8, further comprising: recording an access sequence of accesses made with respect to a copy of the

hierarchical data by each transaction, for each one of all transactions that make accesses to the hierarchical data; wherein the judging step obtains all reading accesses of all transactions that make accesses to the hierarchical data and that can be the second transaction, by looking up a record of the access sequence ([0039-0042; 0044-0053]).

As per claim 11, Iline teaches the concurrency control method of claim 8, further comprising: recording data looked up by making the reading accesses; wherein the judging step obtains the first data by looking up a record of the data looked up ([0039-0042; 0044-0053]).

As per claim 12, Iline teaches the concurrency control method of claim 8, wherein the judging step obtains the first data as data obtained by making the writing access that was made by the second transaction before the reading access, with respect to a state of the hierarchical data at a start of the second transaction, and then making the reading access with respect to a state of the hierarchical data after the writing access ([0039-0042; 0044-0053]).

As per claim 13, Iline teaches the concurrency control method of claim 8, further comprising: making the writing access with respect to a shared copy produced by copying the hierarchical data in order to reflect writing accesses made by all transactions that make accesses to the hierarchical data, when the first transaction is to make the writing access with respect to a copy of the hierarchical data (0026-0036; 0039-0042; 0044-0053); and

storing states of the shared copy at timings at which the writing accesses were made by some of the transactions that make accesses to the hierarchical data (0026-0036; 0039-0042; 0044-0053));

wherein the judging step obtains the first data as data obtained by reproducing a state of the hierarchical data at a timing at which the reading access was made by selecting one of stored states of the shared copy which is close to the state of the hierarchical data at a timing at which the reading access was made and making the writing access that was made by the second transaction with respect to a selected state of the shared copy according to need, and then making the reading access with respect to a reproduced state of the hierarchical data (0026-0036; 0039-0042; 0044-0053)).

As per claim 14, Iline teaches the concurrency control method of claim 13, wherein when there is an upper limit to a number of shared copies that can be recorded, those shared copies which have a higher possibility of being utilized at a time of reproducing a state in which the reading access is to be made later on are recorded at a higher priority; among the shared copies corresponding to states at times of the writing accesses with respect to the hierarchical data (0026-0036; 0039-0042; 0044-0053)).

As per claim 15, Iline teaches the concurrency control method of claim 8, wherein the judging step obtains the second data as data obtained by making the writing access of the second transaction with respect to a state after the writing access was made with respect to a copy of the hierarchical data for the first transaction, and then making the reading access with respect to a

state of the hierarchical data after the writing access of the second transaction ([0039-0042; 0044-0053]).

As per claim 16, Iline teaches the concurrency control method of claim 8, further comprising: making the writing access with respect to a shared copy produced by copying the hierarchical data in order to reflect writing accesses made by all transactions that make accesses to the hierarchical data, when the first transaction is to make the writing access with respect to a copy of the hierarchical data (0026-0036; 0039-0042; 0044-0053)); and

storing states of the shared copy at timings at which the writing accesses were made by some of the transactions that make accesses to the hierarchical data (0026-0036; 0039-0042; 0044-0053));

wherein the judging step obtains the second data as data obtained by reproducing a state of the hierarchical data at a timing at which the reading access is to be made by selecting one of stored states of the shared copy which is close to the state of the hierarchical data at a timing at which the reading access is to be made, making the writing access that was made by the first transaction after that timing, with respect to a selected state of the shared copy, and making the writing access that was made by the second transaction according to need, and then making the reading access with respect to a reproduced state of the hierarchical data (0026-0036; 0039-0042; 0044-0053)).

As per claim 17, Iline teaches the concurrency control method of claim 16, wherein when there is an upper limit to a number of shared copies that can be recorded, those shared

copies which have a higher possibility of being utilized at a time of reproducing a state in which the reading access is to be made later on are recorded at a higher priority, among the shared copies corresponding to states at times of the writing accesses with respect to the hierarchical data (0026-0036; 0039-0042; 0044-0053J).

As per claim 18, Iline teaches the concurrency control method of claim 1, wherein when the judging step judges that the collision will occur, the carrying out step carries out the processing for keeping those transactions that are determined according to prescribed criteria among transactions related to the collision, to wait until other transactions related to the collision are finished (0026-0036; 0039-0042; 0044-0053J).

Response to Arguments

6. Applicant's arguments filed 02/02/07 have been fully considered but they are not persuasive.

Applicant argues that:

A. Iline does not teach or suggest Claims 1, 19, and 20 require *producing a copy of the entire hierarchical data at a time of starting an access to the hierarchical data as to each transaction. Writing access as to each transaction is then made as to its respective copy, while avoiding a collision with accesses as to other transactions. When each transaction is finished, the writing access made as to each transaction (on its respective copy) is reflected on the original hierarchical data (not a copy) while also reflecting that writing access on copies of the hierarchical data for the other transactions that have not finished. In this way, the present*

invention can guarantee the isolation of transactions and controlling the other of processing such that the execution of transactions becomes serializable, even in the case where a plurality of transactions make accesses to the hierarchical data in parallel.

Firstly, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the entire hierarchical data; and/or guarantee the isolation of transactions and controlling the other of processing such that the execution of transactions becomes serializable, even in the case where a plurality of transactions make accesses to the hierarchical data in parallel) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Secondly, it is the examiner's position that Iline does anticipate claims 1, 19, 20 as follows:

producing a copy of the entire hierarchal data at a time of starting an access to the hierarchical data as to each transaction corresponds to *instantiating a data structure object through one or more constructors. An initial constructor, in accordance with one or more embodiments of the invention, may receive one or more parameters, e.g., a multi-part data structure, such as a series of linked vectors or arrays, where a first element of the data structure (e.g., a first vector) is linked to a second element of the data structure (e.g., a second vector).* ([0042]).

the hierarchal data corresponds to *may receive one or more parameters, e.g., a multi-part data structure, such as a series of linked vectors or arrays, where a first element of the data*

structure (e.g., a first vector) is linked to a second element of the data structure (e.g., a second vector). ([0042]).

transaction corresponds to *transaction 34, 36 in Fig. 2.*

writing access as to each transaction is then made as to its respective copy, while avoiding a collision with accesses as to other transactions is equivalent with *TestResultWriter ; TestResultReader (See Code Listing A in page 4, 0044).*

B. The design of Iline insures the no collision between accesses made by different reader-writer pairs could possible occur.

Iline teaches this limitation as follows:

collision between accesses made by different reader-writer pairs could possible occur corresponds to *The writer interface does not have a method available to alter a data already stored in the restricted access model data structure; corrupting the data ([0041]).*

collision between accesses made by different reader-writer pairs could possible occur is equivalent with *TestResultWriter ; TestResultReader (See Code Listing A in page 4, 0044).*

C. Iline does not teach or suggest judging whether any collision occurs and then carrying out a processing for avoiding the collision.

On the contrary, Iline reads on the claimed limitations as follows:

judging whether any collision occurs corresponds to *relationships between data may be determined by the formatter (32), the formatter (32) may then format the data using the relationships ([0041])*.

then carrying out a processing for avoiding the collision corresponds to *then format the data using the relationships ([0041])*.

any collision occurs corresponds to *The writer interface does not have a method available to alter a data already stored in the restricted access model data structure; corrupting the data ([0041])*.

As pointed out by the examiner, Iline does disclose each and every element recited in Applicant's claims 1, 19, 20. The claim language as presented is still read on by the Iline reference at the cited paragraph in the claim rejections.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (571) 272-4112. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham, can be reached on (571) 272-7079. The fax number to this Art Unit is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Miranda Le
May 10, 2007



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